



*The City of **Durham**, North Carolina*  
*Annual Sanitary Sewer System Report*  
*FY 2003 - 2004*

Welcome to the City's fifth annual sewer system report! This report is developed for our customers in order to meet requirements of House Bill 1160, which was passed by the North Carolina General Assembly in 1999. The bill requires owners and/or operators of wastewater collection and treatment systems to provide an annual report to users or customers. Each year's report must summarize the treatment works' and/or collection system's performance over a twelve-month period. In addition to making the report available to all customers, the City also submits the summary to the North Carolina Department of Environment and Natural Resources.

Although this report summarizes activities of the previous fiscal year, we are pleased to announce that effective July 1, 2004, all water and sewer operational units are now a part of the Department of Water Management. Included in the new organization are the divisions responsible for the maintenance of the collection system, the Water and Sewer Maintenance Division, and the Wastewater Division which is responsible for the operation and maintenance of the water reclamation facilities. The collection system, sometimes referred to as the sanitary sewer system, is the series of pipes that transport wastewater to the treatment facilities. Wastewater includes all *used* domestic and process water from any drain leaving a residence, business, industry or other facility and entering the collection system.

**Durham's Sewer System Facilities**

	<b><i>Collection System</i></b>	<b><i>Water Reclamation Facilities</i></b>	
<b>Name of Facility</b>	Operations Center	North Durham Water Reclamation Facility	South Durham Water Reclamation Facility
<b>Permit number</b>	n/a	NCOO23841	NCOO47597
<b>Address</b>	1110 MLK Jr. Pky	1900 E. Club Blvd.	6605 Farrington Rd.
<b>Operator in Charge</b>	Vernon W. Reese	William W. Telford	Robert D. Dodson
<b>Phone number</b>	919-560-4344	919-560-4384	919-560-4386

Wastewater travels through underground sewer pipes to the treatment plant. At the plant, wastewater is treated by physical, biological and chemical processes before it is returned to the environment via receiving streams. The health of downstream users, both human and wildlife, depends on collection and treatment plant staff who ensure that Durham's wastewater is processed to a level that can be returned to the environment with NO adverse impacts. As a result of the high level of treatment, in many cases, water downstream of a water reclamation facility is cleaner than the water upstream of the facility.



This report describes the collection system operation, the wastewater treatment process and the City's grease reduction initiative. As with any large municipal system, occasional blockages cause backups and overflows. Included in this report is a table listing the spills and overflows that occurred this year and the steps taken to remediate the impact and prevent recurrences. ALL incidents were reported to the state within 24 hours of their occurrence. By policy, news releases to inform the public are distributed by the end of the next business day after the occurrence.

The Annual Sanitary Sewer System Report is available at City Hall, Public Libraries, Water Management and Public Works facilities and on the City's website: [www.durhamnc.gov](http://www.durhamnc.gov). Additional copies of the report may be requested by calling either Water Management at (919) 560-4381.



### ***Down the Drain! Where does it go?***

The City maintains over 1143 miles of underground pipes that carry wastewater away from homes, businesses, schools, hospitals and industries. The waste flows by gravity to lift stations located in strategic areas throughout the service area. Pumps in the "lift" stations do just that – they lift the wastewater to a higher elevation where it again flows by gravity, ultimately to one of the City's two water reclamation facilities. Fifty-six pump stations for the collection system are monitored and maintained by Plant Maintenance division staff.

Wastewater flows either north or south, based on the location of a business, home or facility along the ridgeline. The ridgeline runs along Pettigrew Street and the railroad lines. South of Pettigrew, waste flows to the South Durham Water Reclamation Facility, located at 6605 Farrington Road. To the north of the ridgeline, waste flows to the North Durham Water Reclamation Facility at 1900 East Club Boulevard. Durham County owns and operates a third wastewater treatment plant that serves most of Research Triangle Park, Parkwood and a few other south Durham neighborhoods. Visit the Durham County Website at [www.co.durham.nc.us](http://www.co.durham.nc.us) to view a copy of their sewer system report.

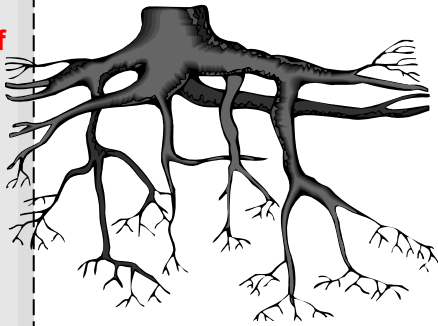
### ***Collection System Performance***

From July 1, 2003 through June 30, 2004, Water and Sewer Maintenance crews "rodded out" 191,606 feet of sewer main/service lines, flushed 305,903 feet of sewer main/service lines, inspected 98,533 feet of sewer main/service lines with closed circuit TV (television) equipment, inspected 735 manholes, repaired/replaced 213 sewer services and responded to 451 blockages. This year, improper disposal of grease continues to be the number one cause of blockages in the sewer system. In fact, **63% of the blockages were caused by grease build-up in the lines** which is similar to plaque buildup in human arteries. Many of the responses to sewer overflows are also repeat calls. City staff responded to six more overflows this year as compared to last year. The City has continued to promote a maintenance campaign to alleviate the environmental and financial impacts of this problem. One major element of the program has been an extensive cleaning of problem areas of the system.

The second major element of the program is the education, prevention and enforcement effort coordinated by the Department's Industrial Pretreatment Program (see following pages).



Common causes of sewer blockages are tree roots. Crews "cut" out these roots where identified and use special root inhibiting chemicals to prevent further root intrusion.



### **Water Reclamation Facility Plant Performance**

The City's two treatment facilities have the combined capacity to treat (or reclaim) 40 million gallons per day (MGD) of wastewater. During this reporting period, the average daily flow treated by the two plants was 18.46 MGD.

During FY '03 -'04, there were no violations at the South Durham Water Reclamation Facility. However, the North Durham Water Reclamation Facility had one violation of the weekly fecal coliform limit due to an electronic malfunction of the Ultraviolet (UV) disinfection unit (see box below). The weekly limit for fecal coliform is 400 colonies per 100 milliliters (ml). The effluent from the plant was measured at 420 colonies per 100 ml. There was no violation of the monthly fecal coliform permit limit. All samples collected and analyzed after the event demonstrated continuing compliance with permit limits. There was no environmental impact as a result of this violation. Wastewater treatment facilities are required to monitor for fecal coliforms because they are bacteria found in the intestines of warm-blooded animals and serve as indicators of the presence of animal/human feces.

### **Analytical Support**

Most laboratory analyses are performed at the City's state-certified laboratory located at the South Durham Water Reclamation Facility site. In addition to providing lab support for the reclamation facilities, the laboratory provides analytical support for the Water Supply and Treatment Division, the City's Storm Water Program and the City's Industrial Pretreatment Program. While the Storm Water Division of the Public Works Department is charged with eliminating illegal discharges into the storm sewers, the Industrial Pretreatment Program manages industrial and non-residential discharges into the City's sanitary sewer system.

Lab staff members conduct **63,000 analyses/year on 62 different test parameters** to ensure compliance with permits and for process control!



Industrial Pretreatment Program staff survey facilities discharging into the sewer system and issue permits to facilities in certain categories, determined either by the type of business activity they conduct or the type(s) of waste discharged from their facility. Permit limits are established based on the ability of the receiving treatment plant – either the North Durham Water Reclamation Facility or the South Durham Water Reclamation Facility – to assimilate, treat and remove substances from the waste.

**Ultraviolet Disinfection is one of many methods used throughout the country to disinfect treated wastewater prior to discharge into the environment. In the final phase of the treatment process, water flows through a channel with several banks of UV bulbs that emit light in the ultraviolet range. The UV light effectively kills pathogenic organisms (disease causing) and is safer for the receiving stream since it leaves no chemical residue in the water.**

## ***The Skinny on Fat Free Sewers***



To help in the effort to reduce grease blockages in the sewer system, the Industrial Pretreatment Program staff coordinates the education and inspection portion of the

grease reduction initiative. Grease enters the sewer system from both household drains as well as poorly maintained grease traps in restaurants and other food service establishments. To meet the 250 mg/L limit for FOG (fats, oil and grease), food preparation and/or processing facilities must clean their removal systems (grease traps) on a monthly basis. More frequent cleaning will be required if a facility discharges more than 250 mg/L of FOG. Less frequent cleaning may be permitted if the facility can demonstrate that the 250 mg/L limit can be met with an alternate cleaning schedule. Cleaning and removal records **must** to be maintained on-site for three years and available for inspection on request.

While restaurants and other food service establishments typically use commercial processors to collect and remove grease from their grease traps, it is not practical for homeowners and residential customers to contract such services. For this reason, the City has provided – at no extra cost to citizens – a collection container for used cooking oil at the Waste Disposal and Recycling Center at 2115 East Club Boulevard.

Here are ***tips*** on how Durham's residential customers can help reduce grease in the system, thus reducing sewer back-ups and overflows:

- Allow grease to cool to a safe temperature. Pour the grease into a container with a lid on it. Bring the container to the Waste Disposal & Recycling Center.
- Compost or dispose of food scraps in the trash can - don't use the garbage disposal,
- Wipe grease off surfaces with absorbent toweling before wash down,
- Remove grease from kitchen utensils with scrapers or paper towels before washing them,
- Share grease reduction tips and information with your neighbors. Become a NEAT Neighborhood! The City's Neighborhood Environmental Action Team (***NEAT***) Program has a grease reduction/education component. Check out the ***NEAT*** page on the City's website at [www.durhamnc.gov](http://www.durhamnc.gov) to find out how you and your neighbors can participate.

For more information, call 560-4381 to request a copy of the *Fat Free Sewers* brochure.

**The City is committed to protecting the environment by providing highly efficient and cost-effective wastewater collection and treatment services for the Durham community. Tours of facilities are available upon request, as are presentations to schools and civic groups. Call 560-4381 to arrange a tour or presentation.**